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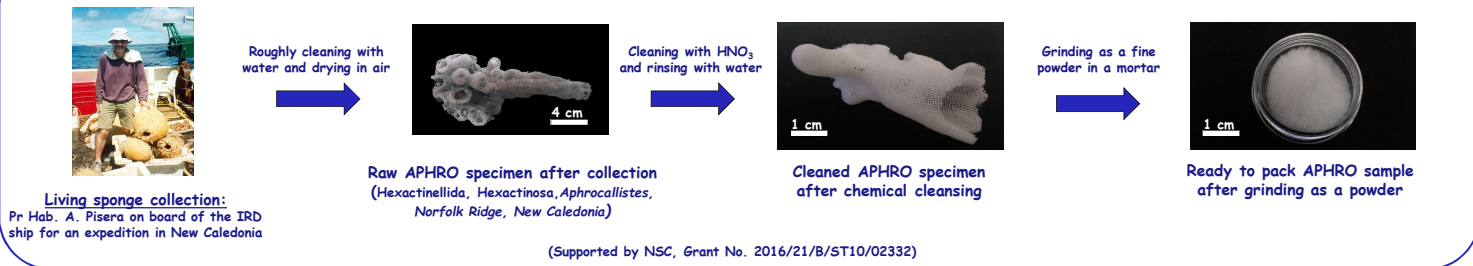
# Deciphering the Role of Organic Matter in the Biomineralization Process of Marine Sponge Spicules: A Solid-State NMR Investigation

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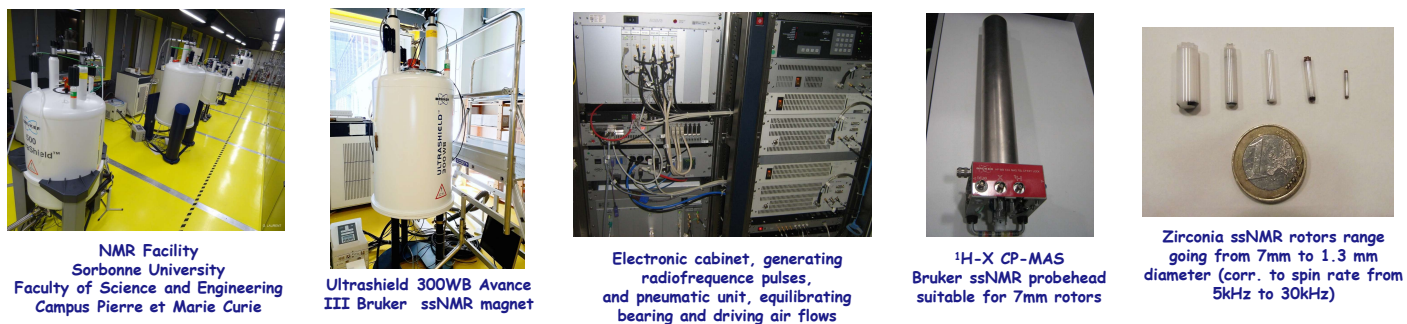
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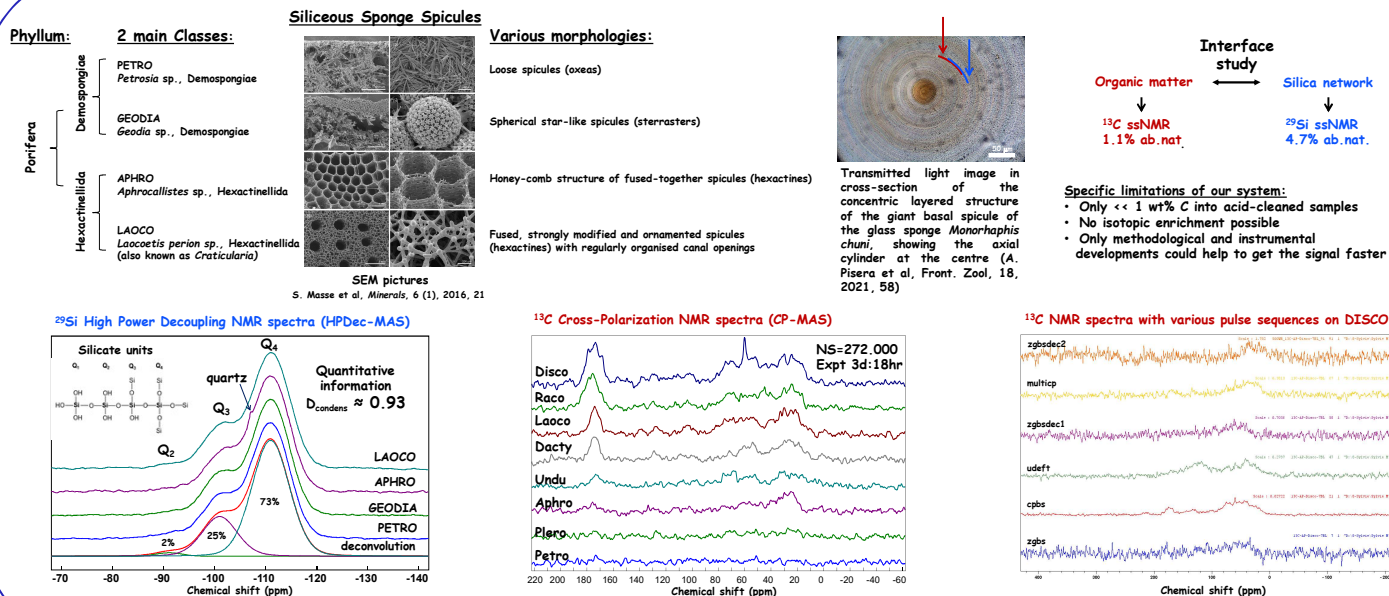
## 1 - Materials Preparation



## 2 - Solid-State NMR Spectroscopy



## 3 - Materials Characterization



## 4 - Conclusion and Outlook

- Sponge spicules are biocomposite materials composed of a siliceous skeleton embedded in an organic matrix
- Inner skeleton is of various shapes depending on the taxon, but surprisingly  $^{29}\text{Si}$  HPDec ssNMR signature is quite ever the same and a condensation degree of ca. 0.93 is usually observed
- $^{13}\text{C}$  CP-MAS ssNMR should be more promising to discriminate the samples but due to the low abundance of  $^{13}\text{C}$  and low content of carbon into the cleaned samples, the signal is too poor to get detailed assignment and to explore the organic-mineral interface through 2D heterocorrelation NMR mapping
- Dynamic Nuclear Polarization (DNP-enhanced ssNMR) should be a helpful technique to go further in the comprehension of the biomineralization process of sponges